

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-25. (Cancelled)

Claim ~~31~~ 26. (Currently Amended): A method for preventing or treating disease in a patient, comprising reactivating the thymus of the patient.

Claim ~~32~~ 27. (Currently Amended): The method of claim ~~31~~ 26, wherein the thymus of the patient has been at least in part atrophied before it is reactivated.

Claim ~~33~~ 28. (Currently Amended): The method of claim ~~32~~ 27, wherein the patient has a disease that at least in part atrophied the thymus of the patient.

Claim ~~34~~ 29. (Currently Amended): The method of claim ~~32~~ 27, wherein the patient has had a treatment of a disease that at least in part atrophied the thymus of the patient.

Claim ~~35~~ 30. (Currently Amended): The method of claim ~~34~~ 29, wherein the treatment is immunosuppression, chemotherapy, or radiation treatment.

Claim ~~36~~ 31. (Currently Amended): The method of claim ~~32~~ 27, wherein the patient is post-pubertal.

Claim ~~37~~ 32. (Currently Amended): The method of claim ~~31~~ 26, further comprising administering cells to the patient, wherein the cells are stem cells, progenitor cells, dendritic cells, or combinations thereof.

Claim ~~38~~ 33. (Currently Amended): The method of claim ~~37~~ 32, wherein the stem cells are selected from the group consisting of hematopoietic stem cells, epithelial stem cells, and combinations thereof.

Claim ~~39~~ 34. (Currently Amended): The method of claim ~~37~~ 32, wherein the progenitor cells are selected from the group consisting of lymphoid progenitor cells, myeloid progenitor cells, and combinations thereof.

Claim ~~40~~ 35. (Cancelled)

Claim ~~41~~ 36. (Currently Amended): The method of claim ~~38~~ 33, wherein the stem cells are hematopoietic stem cells.

Claim ~~42~~ 37. (Currently Amended): The method of claim ~~41~~ 36, wherein the hematopoietic stem cells are ~~CD34+~~ CD34<sup>+</sup>.

Claim ~~43~~ 38. (Currently Amended): The method of claim ~~41~~ 32, wherein the ~~hematopoietic stem~~ cells are autologous.

Claim ~~44~~ 39. (Currently Amended): The method of claim ~~41~~ 32, wherein the ~~hematopoietic stem~~ cells are not autologous.

Claim 45 40. (Currently Amended): The method of claim 41 32, wherein the ~~hematopoietic stem~~ cells are administered when the thymus begins to reactivate.

Claim 46 41. (Currently Amended): The method of claim 31 26, wherein the thymus is reactivated by disruption of sex steroid-mediated signaling to the thymus.

Claim 47 42. (Currently Amended): The method of claim 46 41, further comprising administering cells to the patient, wherein the cells are stem cells, progenitor cells, dendritic cells, or combinations thereof.

Claim 48 43. (Currently Amended): The method of claim 47 42, wherein the stem cells are selected from the group consisting of hematopoietic stem cells, epithelial stem cells, and combinations thereof.

Claim 49 44. (Currently Amended): The method of claim 47 42, wherein the progenitor cells are selected from the group consisting of lymphoid progenitor cells, myeloid progenitor cells, and combinations thereof.

Claim 50 45. (Cancelled)

Claim 51 46. (Currently Amended): The method of claim 48 43, wherein the cells are hematopoietic stem cells.

Claim 52 47. (Currently Amended): The method of claim 51 42, wherein the ~~hematopoietic stem~~ cells are administered at the time disruption of sex steroid-mediated signaling to the thymus is begun.

Claim ~~53~~ 48. (Currently Amended): The method of claim ~~46~~ 41, wherein the sex steroid-mediated signaling to the thymus is disrupted by surgical castration.

Claim ~~54~~ 49. (Currently Amended): The method of claim ~~46~~ 41, wherein the sex steroid-mediated signaling to the thymus is disrupted by chemical castration.

Claim ~~55~~ 50. (Currently Amended): The method of claim ~~46~~ 41, wherein the sex steroid-mediated signaling to the thymus is disrupted by administration of ~~one or more pharmaceuticals~~ a pharmaceutical.

Claim ~~56~~ 51. (Currently Amended): The method of claim ~~55~~ 50, wherein the ~~one or more pharmaceuticals~~ pharmaceutical is selected from the group consisting of LHRH agonists, LHRH antagonists, anti-LHRH vaccines, anti-androgens, anti-estrogens, SERMs, SARMs, SPRMs, ERDs, ~~aromatase~~ aromatase inhibitors, anti-progestogens, Dioxalan derivatives, and combinations thereof.

Claim ~~57~~ 52. (Currently Amended): The method of claim ~~56~~ 51, wherein the LHRH agonists are selected from the group selected from the group consisting of ~~Eulexin~~, Goserelin, Leuprolide, Lupron, ~~Dioxalan derivatives~~, Triptorelin, Meterelin, Buserelin, Histrelin, Nafarelin, Lutrelin, Leuprorelin, Deslorelin, Cystorelin, Decapeptyl, Gonadorelin, and combinations thereof.

Claim ~~58~~ 53. (Currently Amended): The method of claim ~~56~~ 51, wherein the LHRH antagonists are selected from the group consisting of Abarelix, Cetrorelix, and combinations thereof.

Claim ~~59~~ 54. (Currently Amended): The method of claim ~~31~~ 26, wherein clinical symptoms of the disease are reduced as compared to those symptoms that would have otherwise occurred in a patient prior to thymus reactivation.

Claim ~~60~~ 55. (Currently Amended): The method of claim ~~31~~ 26, wherein the disease is caused by an agent selected from the group consisting of viruses, bacteria, fungi, parasites, prions, cancers, allergens, asthma-inducing agents, "self" proteins and antigens which cause autoimmune disease.

Claim ~~61~~ 56. (Currently Amended): The method of claim ~~60~~ 55, wherein the agent is a virus.

Claim ~~62~~ 57. (Currently Amended): The method of claim ~~61~~ 56, wherein the virus is selected from the group consisting of Retroviridae, Picornaviridae, Calciviridae, Togaviridae, Flaviridae, Coronaviridae, Rhabdoviridae, Filoviridae, Paramyxoviridae, Orthomyxoviridae, Bungaviridae, Arenaviridae, Reoviridae, Birnaviridae, Hepadnaviridae, Parvoviridae, Papovaviridae, Adenoviridae, Herpesviridae, Poxviridae, and Iridoviridae.

Claim ~~63~~ 58. (Currently Amended): The method of claim ~~61~~ 56, wherein the virus is selected from the group consisting of influenza virus, human immunodeficiency virus, and herpes simplex virus.

Claim ~~64~~ 59. (Currently Amended): The method of claim ~~60~~ 55, wherein the agent is a ~~bacteria~~ bacterium.

Claim 65 60. (Currently Amended): The method of claim 64 59, wherein the ~~bacteria~~ bacterium is selected from the group consisting of ~~Helicobacter pylori~~ Helicobacter pylori, *Borelia burgdorferi*, *Legionella pneumophila*, ~~Mycobacteria tuberculosis~~ Mycobacterium tuberculosis, ~~Mycobacteria avium~~ Mycobacterium avium, ~~Mycobacteria intracellulare~~ Mycobacterium intracellulare, ~~Mycobacteria kansasii~~ Mycobacterium kansasii, ~~Mycobacteria gordonae~~ Mycobacterium gordonae, *Mycobacteria sporozoites*, *Staphylococcus aureus*, *Neisseria gonorrhoeae*, *Neisseria meningitidis*, *Listeria monocytogenes*, ~~Streptococcus pyogene~~ Streptococcus pyogenes, *Streptococcus agalactiae*, *Streptococcus faecalis*, *Streptococcus bovis*, *Streptococcus pneumoniae*, pathogenic *Campylobacter* sporozoites, *Enterococcus* sporozoites, *Haemophilus influenzae*, ~~Bacillus anthracis~~ Bacillus anthracis, *Corynebacterium diphtheriae*, *Corynebacterium* sporozoites, *Erysipelothrix rhusiopathiae*, *Clostridium perfringens*, *Clostridium tetani*, *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Pasturella multocida*, *Bacteroides* sporozoites, *Fusobacterium nucleatum*, *Streptobacillus moniliformis*, *Treponema pallidum*, *Treponema pertenue*, *Leptospira*, and *Actinomyces israeli*.

Claim 66 61. (Currently Amended): The method of claim 64 59, wherein the bacteria is a ~~mycobacteria~~ mycobacterium.

Claim 67 62. (Currently Amended): The method of claim 60 55, wherein the agent is a parasite.

Claim 68 63. (Currently Amended): The method of claim 65 60, wherein the parasite is selected from the group consisting of *Plasmodium falciparum*, *Plasmodium yoelli*, and *Toxoplasma gondii*.

Claim ~~69~~ 64. (Currently Amended): The method of claim ~~67~~ 62, wherein the parasite is a malaria parasite.

Claim ~~70~~ 65. (Currently Amended): The method of claim ~~60~~ 55, wherein the agent is an infectious ~~fungi~~ fungus.

Claim ~~71~~ 66. (Currently Amended): The method of claim ~~70~~ 65, wherein the infectious ~~fungi~~ fungus is selected from the group consisting of *Cryptococcus neoformans*, *Histoplasma capsulatum*, *Coccidioides immitis*, *Blastomyces dermatitidis*, *Chlamydia trachomatis*, *Candida albicans*.

Claim ~~72~~ 67. (Currently Amended): The method of claim ~~60~~ 55, wherein the agent is a cancer.

Claim ~~73~~ 68. (Currently Amended): The method of claim ~~72~~ 67, wherein the cancer is selected from the group consisting of ~~cancers~~ a cancer of the brain, ~~cancers~~ a cancer of the lung, ~~cancers~~ a cancer of the ovary, ~~cancers~~ a cancer of the breast, ~~cancers~~ a cancer of the prostate, ~~cancers~~ a cancer of the colon, ~~and cancers~~ a cancer of the blood, a carcinoma, a melanoma, a sarcoma, and any combination thereof.

Claim ~~74~~ 69. (Currently Amended): The method of claim ~~60~~ 55, wherein the agent is an allergen.

Claim ~~75~~ 70. (Currently Amended): The method of claim ~~74~~ 69, wherein the allergen causes an allergic condition selected from the group consisting of eczema, allergic

rhinitis, allergic coryza, hay fever, bronchial asthma, urticaria (hives), and food allergies.

Claims ~~76~~ 71-72. (Cancelled)

Claim ~~78~~ 73. (Currently Amended): The method of claim ~~31~~ 26, further comprising administering ~~at least one~~ a cytokine, ~~at least one~~ a growth factor, or a combination of ~~at least one~~ a cytokine and ~~at least one~~ a growth factor to the patient.

Claim ~~79~~ 74. (Currently Amended): The method of claim ~~78~~ 73, wherein the cytokine is selected from the group consisting of Interleukin 2 (IL-2), Interleukin 3 (IL-3), Interleukin 4 (IL-4), Interleukin 5 (IL-5), Interleukin 6 (IL-6), Interleukin 7 (IL-7), Interleukin 10 (IL-10), Interleukin 12 (IL-12), Interleukin 15 (IL-15), Interferon gamma (IFN- $\gamma$ ), and any combinations thereof.

Claim ~~80~~ 75. (Currently Amended): The method of claim ~~78~~ 73, wherein the growth factor is selected from the group consisting of ~~members~~ a member of the epithelial growth factor family, ~~members~~ a member of the fibroblast growth factor family, stem cell factor, granulocyte colony stimulating factor (G-CSF), keratinocyte growth factor (KGF), insulin-like growth factor-1 (IGF-1), a growth hormone, a thyroid hormone, and any combinations thereof.

Claims ~~81~~ 76-78. (Cancelled)

Claim ~~84~~ 79. (Currently Amended): A method for enhancing transplantation of donor hematopoietic stem cells into the thymus of a recipient patient, comprising:



depleting the T cells of the ~~patient~~, patient;  
reactivating the thymus of the ~~patient~~, patient; and  
transplanting donor hematopoietic stem cells to the patient,  
wherein uptake of the donor hematopoietic stem cells into the patient's thymus  
is enhanced as compared to the uptake that would have otherwise occurred in a patient  
prior to thymus reactivation.

Claim ~~85~~ 80. (Currently Amended): A method for increasing virus-specific peripheral T  
cell responsiveness of a patient with an at least partially atrophied thymus, comprising:

reactivating the thymus of the ~~patient~~, patient;  
exposing the patient to a ~~virus~~, virus; and  
determining the virus-specific peripheral T cell responsiveness in the  
patient,  
wherein the patient has an increased viral-specific peripheral T cell  
responsiveness as compared to the responsiveness that would have otherwise occurred  
in a patient prior to thymus reactivation.

Claim 81. (New): The method of claim 38, wherein the cells are genetically modified.

Claim 82. (New): The method of claim 41, wherein the sex steroid-mediated signaling  
to the thymus is disrupted by lowering the level of a sex steroid hormone.

Claim 83. (New): The method of claim 26, wherein the patient is immunosuppressed.

Claim 84. (New): The method of claim 51, wherein the anti-androgen is Eulexin or  
ketoconazole.